

REMARKS

The present Amendment is being filed in response to the Official Action dated October 30, 2007 for the above identified patent application.

Independent Claim 1 has been revised to more clearly define the nature of the invention, and further distinguish it over the applied prior art. More specifically, independent Claim 1 now recites that the locking device, which retains the rock drilling machine coupled to a second part of the coupling sleeve, permits the rock drilling machine to be rotated in a direction for disconnecting a first part of the coupling device from the rock bolt, without disconnecting the second part of the coupling sleeve, which contains the locking device, from the rock drilling machine. Claim 1 also recites that the rock bolt reinforces a rock after the rock bolt is disconnected from the coupling sleeve. As discussed at page 2, last paragraph of Applicant's specification, after the rock bolt 1 connected to the first part of the coupling sleeve is anchored in a hole in a rock, the rock drilling machine is rotated in a direction which loosens the thread connection between the coupling sleeve and the rock bolt to disconnect the rock bolt from the coupling sleeve to permit the rock bolt to remain in the rock to reinforce the rock. However, the second part of the coupling sleeve which is connected to the drilling machine, and which would otherwise be loosened by rotating the drilling machine in a direction which

loosens the coupling sleeve from the rock bolt, remains connected to the rock drilling machine because the locking device in the second part of the coupling sleeve is loaded prior to rotating the drilling machine in a loosening direction. Therefore, the coupling sleeve remains connected to the rock drilling machine during normal operation of the drilling machine, and remains connected to the drilling machine even when the drilling machine is rotated in an opposite direction to disconnect the rock bolt from the coupling sleeve.

However, when the drilling machine is operating normally to anchor the rock bolt into rock, the locking device in the coupling sleeve is unloaded to permit efficient transfer of percussion energy from the rock drilling machine to the rock bolt through the coupling sleeve disposed therebetween. Accordingly, the coupling sleeve disclosed and claimed by Applicant enables efficient transmission of percussion energy between a rock drilling machine and a rock bolt during normal operation of the rock drilling machine, and enables the rock bolt to be disconnected from the coupling sleeve by rotating the rock drilling machine in a direction loosening the thread connection between the rock bolt and one end of the coupling sleeve, while preventing loosening of the thread connection between the rock drilling machine and the other end of the coupling sleeve as a result of loading of the locking device in the coupling sleeve. As noted above, the relationship between the coupling sleeve and the locking device permits sequential reinforcement of rock by

efficiently disconnecting the rock bolt from the rock drilling machine, while maintaining the connection between the coupling sleeve and the rock drilling machine for connecting another rock bolt to the drilling machine through the coupling sleeve.

The revision to independent Claim 1 is supported by, for example, page 2, last paragraph, of the original specification.

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For the reasons discussed below, Applicant respectfully submits that independent Claim 1 is in condition for allowance.

At page 3 of the Official Action, Claim 1 has been rejected as being anticipated under 35 U.S.C. Section 102(b) by the Sanderson patent (U.S. Pat. No. 1,994,792).

At page 4 of the Official Action, Claim 1 has been rejected under 35 U.S.C. Section 102(b) and anticipated by the Ponto patent (U.S. Pat. No. 1,701,985), or in the alternative, under 35 U.S.C. Section 103(a) as being obvious over the Ponto patent in view of the Sanderson patent.

Applicant initially notes with regard to the rejection of Claim 1 as being anticipated by Sanderson, the Official Action states that Sanderson discloses "a coupling sleeve (6) connecting a threaded rock bolt (5) to an impact rock drilling machine (3,

2) . . .". Applicant respectfully disagrees. Element 6 of the Sanderson patent is disclosed as being a "flattened blade portion" of body portion 1 of a drill tool (see page 2, first column, Lines 20 - 24 of the Sanderson Specification). The Sanderson patent is directed to "...tools for use in churn and percussion drilling and more particularly to a tool assembly for use in deep well drilling" (page 1, col. 1, lines 1 - 3 of the Sanderson specification). Therefore, Sanderson is not directed to a coupling sleeve connecting a threaded rock bolt to an impact rock drilling machine in which the rock bolt is disconnected from the coupling sleeve for reinforcing rock with rock bolts, as disclosed and claimed by Applicant.

The Ponto patent is directed to a deep well sucker rod (page 1, lines 1 - 4 of the Ponto specification). Like the Sanderson patent, Ponto is not directed to a coupling sleeve connecting a threaded rock bolt to an impact rock drilling machine for reinforcing rocks by a rock bolt disconnectable from the rock drilling machine through a coupling sleeve.

In addition to the above differences between the coupling sleeve as defined by independent Claim 1 and the disclosures of the Sanderson & Ponto patents, Applicant notes that the locking device contained within the coupling sleeve defined by independent Claim 1 is in use (loaded) when the rock bolt is to be disconnected from the rock drilling machine, and not during normal drilling operation. More specifically, independent Claim

1 expressly recites that percussion energy is transmitted from the rock drilling machine to the rock bolt (through the coupling sleeve disposed therebetween) when the locking device is unloaded. On the contrary, the Sanderson and Ponto locking devices are used during normal drilling operation.

Moreover, neither the Sanderson or the Ponto devices transmit percussion energy in the same way as disclosed and claimed by Applicant. The coupling sleeve disclosed and claimed by Applicant also transmits both percussion energy, and rotational movement (which would be recognized by a person skilled in the art). During a percussion operation, there is no load on the locking device contained within the coupling sleeve (independent Claim 1 expressly recites that the locking device of the coupling sleeve is unloaded during a percussion operation), and a person skilled in the art will recognize that the load on the locking pin to prevent rotation of the drilling machine relative to the coupling sleeve during disassembly is significantly less than the load would be on the locking pin if it were not disconnected during the transmission of percussion energy. Thus, while the invention disclosed and claimed by Applicant recognizes that the locking device is unloaded during transmission of percussion energy during a normal drilling operation, the locking elements of the Sanderson and Ponto devices are not in an unloaded state during normal drilling operation when percussion energy is being transmitted.

In addition to the above, Applicant notes that Sanderson discloses a tap bar tool shaft connected to a rope (10) through a rope socket (2) secured by a threaded stud (3), in which a dowel (15) prevents loosening of the threaded stud (3) during operation (See page 2, column 2, lines 13 - 18 and 55 - 58 of the Sanderson specification). Although Sanderson states that it teaches percussion drilling, the tool described therein does not transmit percussion or rotational energy, but rather the tool is exposed to a resulting transverse wave of impact vibrations each time the tool drops (See page 1, column 1, lines 14 - 19 of the Sanderson specification). The tool described in Sanderson, therefore, cannot transmit percussion energy in the same manner as the coupling sleeve disclosed and claimed by Applicant because the Sanderson tool does not have a rigid connection but instead the tool is connected to a rope.

The Ponto patent discloses a deep well sucker rod, which is not capable of transmitting percussion energy because the threaded pins (5, 6) are not in contact with any bottom in the box (7). A person skilled in the art will recognize that percussion energy in a drilling machine is not transmitted via the surfaces of threads, but is transmitted through the bottom of a device. Additionally, the locking pin of the Ponto patent maintains the threaded part in place during normal drilling operation, while the locking device of the coupling sleeve disclosed and claimed by Applicant is expressly recited to be in its unloaded state during normal drilling operation when

percussion energy is transmitted from the rock drilling machine to the rock bolt through the coupling sleeve.

Applicant respectfully submits, for the reasons discussed herein, that neither the Sanderson or Ponto patents, either alone or in combination, anticipate or render obvious independent Claim 1, when all positively recited features of this claim are considered in the patentability determination. It is well established that a rejection of a claim as being anticipated by a prior art reference requires the Patent & Trademark Office to establish a strict identify of invention between the rejected claim, and a single prior art reference. Stated in other words, a rejection of a claim as being anticipated by a prior art reference is improper unless a single prior art reference discloses all features of the rejected claim, as arranged in the claim. See, for example, Connell v. Sears, Roebuck & Co., 220 USPQ 193 (Fed. Cir. 1983).

In the instant case, neither the Sanderson or Ponto patents disclose all features of the coupling sleeve recited in independent Claim 1, as arranged in the claim. As discussed herein, neither the Sanderson or Ponto patents disclose 1). a coupling sleeve for connecting a rock drilling machine to a rock bolt for disconnecting the rock bolt from the coupling sleeve for reinforcing a rock; 2). a locking device in the coupling sleeve which is in its unloaded state during normal drilling operation to permit transmission of percussion energy between the rock

drilling machine and the rock bolt through the coupling sleeve disposed therebetween; or 3). a locking device in the coupling sleeve which permits the rock bolt to be disconnected from one end of the coupling sleeve by rotation of the rock drilling machine in a direction for loosening the thread connection between the coupling sleeve and the rock bolt, while preventing loosening of the threaded connection between the rock drilling machine and the coupling sleeve when the rock drilling machine is rotated in the loosening direction.

Applicant submits that neither the Sanderson or Ponto patents anticipate independent Claim 1 when all positively recited features of independent Claim 1 are considered in the patentability determination, and are compared to the disclosures of each of the Sanderson and Ponto patents in their entireties. Since neither the Sanderson or Ponto patents teach a coupling sleeve defined by independent Claim 1, a combination of these references likewise can not teach or suggest the coupling sleeve defined by independent Claim 1.

For the reasons discussed herein, Applicant respectfully submits that independent Claim 1 is allowable over the prior art applied in the Official Action when all positively recited features of Claim 1 are considered in the patentability determination. Applicant further submits that all positively recited features of independent Claim 1, even if considered to be somewhat functional in nature, are entitled to full consideration

in the patentability determination. Applicant respectfully refers to In re Hallman, 210 USPQ 609 (CCPA, 1981). The Hallman decision concluded that there is nothing intrinsically wrong with defining something by what it does rather than by what it is, and that product claims may be drafted to include process steps to wholly or partially define the claimed product. Moreover, to the extent that process limitations distinguish products over prior art, they must be given the same consideration as traditional product characteristics.

Applicant respectfully submits that even if some of the limitations recited in independent Claim 1, as amended herein, are considered to be process or functional limitations, they are nonetheless entitled to full patentable consideration in determining the patentability of the claimed coupling sleeve.

Applicant respectfully submits that independent Claim 1, as amended herein, is in condition for allowance, and favorable action is respectfully requested.

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Enclosed is a Petition for a one month extension of time for responding to the Official Action, through and including February

29, 2008, and the applicable fee for the requested one month extension at the large entity rate.

Respectfully submitted,


Mark P. Stone
Reg. No. 27,954
Attorney for Applicant
25 Third Street, 4th Floor
Stamford, CT 06905
(203) 329-3355